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[Document Name] Specification

[Title of the Invention] INFORMATION PROCESSING APPARATUS AND METHOD, RECORDING MEDIUM, AND PROGRAM

[Scope of Claims]

[Claim 1]

An information processing apparatus comprising:

acquisition means for acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program;

extraction means for extracting a word suitable for representing a characteristic of the television program from the television program information acquired by the acquisition means;

first storage means for generating and storing a first file composed of the word extracted by the extraction means;

second storage means for generating and storing a second file in which the word extracted by the extraction means is associated with the television program ID of the television program information with the word extracted;

first provision means for providing the other apparatus with the first file stored in the first storage means; and

second provision means for, if receiving information about a word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the

received information from the second file stored in the second storage means, further reading the television program information identified by the read television program ID from the television program information acquired by the acquisition means, and providing the other apparatus with the television program information.

[Claim 2]

The information processing apparatus according to claim 1,

wherein the extraction means counts the number of occurrences of a given word contained in the television program information of the television program for each television program and extracts a word having a large count value as the word suitable for representing the characteristic of the television program.

[Claim 3]

The information processing apparatus according to claim 1,

wherein the extraction means analyzes a sentence contained in the television program information and extracts the word suitable for representing the characteristic of the television program from a remaining part except a part corresponding to a specified rule.

[Claim 4]

The information processing apparatus according to claim 1,

wherein the extraction means extracts a predetermined word as the word suitable for presenting the

characteristic of the television program.

[Claim 5]

The information processing apparatus according to claim 1,

wherein the extraction means prohibits the predetermined word from being extracted as the word suitable for representing the characteristic of the television program.

[Claim 6]

The information processing apparatus according to claim 1,

wherein the extraction means converts the extracted word into predetermined one word in a synonym if determined that there is the synonym in the extracted word and extracts the converted word as the word representing the characteristic of the television program.

[Claim 7]

The information processing apparatus according to claim 1,

wherein the first storage means determines whether or not the word extracted by the extraction means is already stored in the first file and, if determined that it is already stored therein, does not store the word in the first file.

[Claim 8]

An information processing method comprising:

an acquisition step of acquiring a television program ID for identifying each television program and

television program information including at least a television program content explaining a content of the television program;

an extraction step of extracting a word suitable for representing a characteristic of the television program from the television program information acquired in a process of the acquisition step;

a first generation step of generating a first file composed of the word extracted in a process of the extraction step;

a second generation step of generating a second file in which the word extracted in the process of the extraction step is associated with the television program ID of the television program information with the word extracted;

a first provision step of providing the other apparatus with the first file generated in a process of the first generation step; and

a second provision step of, if receiving information about a word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the received information from the second file generated in a process of the second generation step, further reading the television program information identified by the read television program ID from the television program information acquired in a process of the acquisition step, and providing the other apparatus with the television

program information.

[Claim 9]

A recording medium with a computer-readable program recorded therein, the program comprising:

an acquisition step of acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program;

an extraction step of extracting a word suitable for representing a characteristic of the television program from the television program information acquired in a process of the acquisition step;

a first generation step of generating a first file composed of the word extracted in a process of the extraction step;

a second generation step of generating a second file in which the word extracted in the process of the extraction step is associated with the television program ID of the television program information with the word extracted;

a first provision step of providing the other apparatus with the first file generated in a process of the first generation step; and

a second provision step of, if receiving information about a word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the

received information from the second file generated in a process of the second generation step, further reading the television program information identified by the read television program ID from the television program information acquired in a process of the acquisition step, and providing the other apparatus with the television program information.

[Claim 10]

A program to allow a computer to perform:

an acquisition step of acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program;

an extraction step of extracting a word suitable for representing a characteristic of the television program from the television program information acquired in a process of the acquisition step;

a first generation step of generating a first file composed of the word extracted in a process of the extraction step;

a second generation step of generating a second file in which the word extracted in a process of the extraction step is associated with the television program ID of the television program information with the word extracted;

a first provision step of providing the other apparatus with the first file generated in a process of the first generation step; and

a second provision step of, if receiving information about a word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the received information from the second file generated in a process of the second generation step, further reading the television program information identified by the read television program ID from the television program information acquired in a process of the acquisition step, and providing the other apparatus with the television program information.

[Claim 11]

An information processing apparatus including:

first reception means for receiving a file composed of information about a word suitable for representing a characteristic of a television program;

transmission means for transmitting information about a word instructed by a user among the information about the word stored in the file received by the first reception means, to the other apparatus that transmitted the file; and

second reception means for receiving information about a television program read and transmitted by the other apparatus and associated with the information about the word as a result of transmitting the information about the word instructed by the user by the transmission means.

[Claim 12]

An information processing method comprising:

a first reception control step of controlling reception of a file composed of information about a word suitable for representing a characteristic of a television program;

a transmission control step of controlling transmission of information about a word instructed by a user among information about each of words stored in the file received in a process of the first reception control step, to the other apparatus that transmitted the file; and

a second reception control step of controlling reception of information about the television program read and transmitted by the other apparatus and associated with the information about the word as a result of controlling transmission of the information about the word instructed by the user in a process of the transmission control step.

[Claim 13]

A recording medium with a computer-readable program recorded therein, the program comprising:

a first reception control step of controlling reception of a file composed of information about a word suitable for representing a characteristic of a television program;

a transmission control step of controlling transmission of information about a word instructed by a user among information about each of words stored in the file received in a process of the first reception control step, to the other apparatus that transmitted the file; and

a second reception control step of controlling

reception of information about the television program read and transmitted by the other apparatus and associated with the information about the word as a result of controlling transmission of the information about the word instructed by the user in a process of the transmission control step.

[Claim 14]

A program to allow a computer to perform:

a first reception control step of controlling reception of a file composed of information about a word suitable for representing a characteristic of a television program;

a transmission control step of controlling transmission of information about a word instructed by a user among information about each of words stored in the file received in a process of the first reception control step, to the other apparatus that transmitted the file; and

a second reception control step of controlling reception of information about the television program read and transmitted by the other apparatus and associated with the information about the word as a result of controlling transmission of the information about the word instructed by the user in a process of the transmission control step.

[Background of the Invention]

[0001]

[Field of the Invention]

The present invention relates to an information processing apparatus and method, a recording medium, and a program. Specifically, the present invention relates to an information processing apparatus and method, a recording medium, and a program suitably used for an apparatus which allows a user to easily search intended television programs for watching and listening from a plurality of pieces of information.

[0002]

[Related art]

In recent years, television broadcast has spread in the form of not only regular broadcast, but also satellite broadcast using artificial satellites. Consequently, the number of channels are increasing. Increasing the number of channels inevitably increases the number of television programs. There is a trend of providing television programs that more properly suite the audience interests.

[0003]

[Problem to be Solved by the Invention]

It is beneficial for an audience to be able to watch and listen to television programs that suit their interests. However, it has been difficult and troublesome to search for intended television programs out of a large number of television programs and out of information about

the large number of television programs.

[0004]

Information about television programs is provided in the forms of television program guides distributed on paper media such as newspapers and an EPG (Electronic Program Guide) distributed via networks. These guides are available in table formats with broadcast stations associated with broadcast times. Though the tabular television program guides are well designed for high visibility, the amount of information is large. The audience feels it difficult to search for the intended television programs and needs a long time for search therefor.

[0005]

There is proposed a method of using keywords to be able to easily search for television programs intended by the audience. According to this method, for example, the audience selects a keyword that matches the audience's interest from a plurality of predetermined keywords. Television program information including the selected keyword is extracted from the EPG and is provided to the audience.

[0006]

However, the EPG is not necessarily configured to include only the information that accurately represents the television program contents. The use of inappropriate keywords may fail to search appropriate television programs in searching using the keywords. Also, selection of

keywords may fail to search television programs to be searched. For example, using the word "America" as the keyword fails to extract television programs containing the word (information) "USA" though these programs concern America.

[0007]

The present invention has been made in consideration of the foregoing situation. It is therefore an object of the present invention to enable the audience to easily search intended television programs and prevent a searched result from including inappropriate information.

[0008]

[Means for Solving the Problem]

A first information processing apparatus according to the present invention includes: acquisition means for acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program; extraction means for extracting a word suitable for representing a characteristic of the television program from the television program information acquired by the acquisition means; first storage means for generating and storing a first file composed of the word extracted by the extraction means; second storage means for generating and storing a second file in which the word extracted by the extraction means is associated with the television program ID of the

television program information with the word extracted; first provision means for providing the other apparatus with the first file stored in the first storage means; and second provision means for, if receiving information about a word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the received information from the second file stored in the second storage means, further reading the television program information identified by the read television program ID from the television program information acquired by the acquisition means, and providing the other apparatus with the television program information.

[0009]

The extraction means counts the number of occurrences of a given word contained in the television program information of the television program for each television program and extracts a word having a large count value as the word suitable for representing the characteristic of the television program.

[0010]

The extraction means analyzes a sentence contained in the television program information and extracts the word suitable for representing the characteristic of the television program from a remaining part except a part corresponding to a specified rule.

[0011]

The extraction means extracts a predetermined word

as the word suitable for presenting the characteristic of the television program.

[0012]

The extraction means prohibits the predetermined word from being extracted as the word suitable for representing the characteristic of the television program.

[0013]

The extraction means converts the extracted word into predetermined one word in a synonym if determined that there is the synonym in the extracted word and extracts the converted word as the word representing the characteristic of the television program.

[0014]

The first storage means determines whether or not the word extracted by the extraction means is already stored in the first file and, if determined that it is already stored therein, does not store the word in the first file.

[0015]

A first information processing method according to the present invention includes: an acquisition step of acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program; an extraction step of extracting a word suitable for representing a characteristic of the television program from the television program information acquired in a process of the

acquisition step; a first generation step of generating a first file composed of the word extracted in a process of the extraction step; a second generation step of generating a second file in which the word extracted in the process of the extraction step is associated with the television program ID of the television program information with the word extracted; a first provision step of providing the other apparatus with the first file generated in a process of the first generation step; and a second provision step of, if receiving information about the word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the received information from the second file generated in a process of the second generation step, further reading the television program information identified by the read television program ID from the television program information acquired in a process of the acquisition step, and providing the other apparatus with the television program information.

[0016]

A program for a first recording medium according to the present invention includes: an acquisition step of acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program; an extraction step of extracting a word suitable for representing a characteristic of the television program from the

television program information acquired in a process of the acquisition step; a first generation step of generating a first file composed of the word extracted in a process of the extraction step; a second generation step of generating a second file in which the word extracted in the process of the extraction step is associated with the television program ID of the television program information with the word extracted; a first provision step of providing the other apparatus with the first file generated in a process of the first generation step; and a second provision step of, if receiving information about a word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the received information from the second file generated in a process of the second generation step, further reading the television program information identified by the read television program ID from the television program information acquired in a process of the acquisition step, and providing the other apparatus with the television program information.

[0017]

A program according to the present invention allows a computer to perform: an acquisition step of acquiring a television program ID for identifying each television program and television program information including at least a television program content explaining a content of the television program; an extraction step of extracting a word suitable for representing a

characteristic of the television program from the television program information acquired in a process of the acquisition step; a first generation step of generating a first file composed of the word extracted in a process of the extraction step; a second generation step of generating a second file in which the word extracted in a process of the extraction step is associated with the television program ID of the television program information with the word extracted; a first provision step of providing the other apparatus with the first file generated in a process of the first generation step; and a second provision step of, if receiving information about the word selected from each of words contained in the first file from the other apparatus, reading the television program ID associated with the word represented by the received information from the second file generated in a process of the second generation step, further reading the television program information identified by the read television program ID from the television program information acquired in a process of the acquisition step, and providing the other apparatus with the television program information.

[0018]

A second information processing apparatus according to the present invention includes: first reception means for receiving a file composed of information about a word suitable for representing a characteristic of a television program; transmission means for transmitting information about a word instructed by a

user among the information about each of words stored in the file received by the first reception means, to the other apparatus that transmitted the file; and second reception means for receiving information about a television program read and transmitted by the other apparatus and associated with the information about the word as a result of transmitting the information about the word instructed by the user by the transmission means.

[0019]

A second information processing method according to the present invention includes: a first reception control step of controlling reception of a file composed of information about a word suitable for representing a characteristic of a television program; a transmission control step of controlling transmission of information about a word instructed by a user among information about each of words stored in the file received in a process of the first reception control step, to the other apparatus that transmitted the file; and a second reception control step of controlling reception of information about a television program read and transmitted by the other apparatus and associated with the information about the word as a result of controlling transmission of the information about the word instructed by the user in a process of the transmission control step.

[0020]

A program for a second recording medium according to the present invention includes: a first reception

control step of controlling reception of a file composed of information about a word suitable for representing a characteristic of a television program; a transmission control step of controlling transmission of the information about the word instructed by a user among information about each of words stored in the file received in a process of the first reception control step, to the other apparatus that transmitted the file; and a second reception control step of controlling reception of information about a television program read and transmitted by the other apparatus and associated with the information about the word as a result of controlling transmission of the information about the word instructed by the user in a process of the transmission control step.

[0021]

A second program according to the present invention allows a computer to perform: a first reception control step of controlling reception of a file composed of information about a word suitable for representing a characteristic of a television program; a transmission control step of controlling transmission of information about a word instructed by a user among information about each of words stored in the file received in a process of the first reception control step, to the other apparatus that transmitted the file; and a second reception control step of controlling reception of information about a television program read and transmitted by the other apparatus and associated with the information about the

word as a result of controlling transmission of the information about the word instructed by the user in a process of the transmission control step.

[0022]

In the first information processing apparatus and method, and program of the present invention, the words suitable for representing the characteristic of the television program are extracted for each television program from the acquired television program information. The file composed of only the extracted words is provided to the other apparatus. Meanwhile, the apparatus also holds the file with the extracted word associated with the television program information with the word extracted. When an instruction is issued from the other apparatus, as a process in response to the instruction, the information is read from the held file and provided to the other apparatus.

[0023]

In the second information processing apparatus and method, and program of the present invention, the file composed of the word suitable for representing the characteristic of the television program is acquired, and the information about the television program associated with the information about the word selected by the user is further acquired from the file.

[0024]

[Embodiments of the invention]

Embodiments of the present invention will be

described below with reference to the accompanying drawings. FIG. 1 is a diagram showing a configuration of an embodiment of an information processing system according to the present invention. The information processing system shown in FIG. 1 provides users (audiences) with information about television programs.

[0025]

The information processing system shown in FIG. 1 includes: a network 1 composed of the Internet, a LAN (Local Area Network), and the like; a server 2 that is connected to the network 1 and provides users with information about television programs; a recording/reproducing apparatus 3 that is connected to the network 1, provides the users with the information from the server 2, and provides the server 2 with instructions from the users; and a television receiver 4 that is connected to the recording/reproducing apparatus 3 and displays information about the television program and the television program itself.

[0026]

FIG. 2 is a diagram showing an internal configuration example of the server 2. The server 2 can be composed of a computer such as a so-called personal computer. The following describes the internal configuration example of the server 2 shown in FIG. 2. A CPU (Central Processing Unit) 11 of the server 2 performs various processes in accordance with a program stored in a ROM (Read Only Memory) 12. A RAM (Random Access Memory) 13

appropriately stores data and programs needed for the CPU 11 to perform the various processes. An input/output interface 15 connects with an input section 16 composed of a keyboard and a mouse, and outputs a signal input to the input section 16 to the CPU 11. The input/output interface 15 also connects with an output section 17 composed of a display, a speaker and the like.

[0027]

Further, the input/output interface 15 connects with a storage section 18 composed of a hard disk and the like and a communication section 19 interchanging data with other apparatuses (e.g., recording/reproducing apparatus 3) via the network 1. A drive 20 is used to read data from or write data to recording media such as a magnetic disk 31, an optical disk 32, a magnetic optical disk 33, and semiconductor memory 34.

[0028]

FIG. 3 is a diagram showing an internal configuration example of a recording/reproducing apparatus 3. The recording/reproducing apparatus 3 is also referred to as a video tape recorder (VTR), and has a function of recording video and audio, and also a function of reproducing the recorded video and audio. Since the embodiment can use a manner in the past of recording and reproducing the video and audio, a detailed description thereof is omitted for simplicity. Accordingly, FIG. 3 shows a recording/reproducing section 52, i.e., a single block to perform processes concerning recording and

reproduction of the video and audio.

[0029]

A communication section 53 is provided to communicate with the other apparatuses via the network 1. A display section 54 is composed of an LCD (Liquid Crystal Display) and the like, and is provided to display information about the time and states of the recording/reproducing apparatus 3 (such as reproduction state and recording state). An interface 55 is provided to interchange data with the television receiver 4.

[0030]

A control section 56 controls respective parts of a main body 51 of the recording/reproducing apparatus 3. The recording/reproducing apparatus 3 includes the main body 51 and a remote controller (for example, a remote controller 71 to be described later with reference to FIG. 5) supplying the main body 51 with user's instructions. Here, the following description assumes that the communication section 53 not only interchanges data with the other apparatuses via the network 1, but also receives data from the remote controller 71. Infrared rays, radio, and the like are used for communication between the main body 51 and the remote controller 71.

[0031]

FIG. 4 shows an internal configuration example of a television receiver 4. The television receiver 4 has: a display section 62 including a cathode ray tube and the like to display videos such as television program

information; and a display processing section 63 to control display of the display section 62. A communication section 64 receives data from the remote controller 71 that supplies a main body 61 with user's instructions. An interface 65 is provided to interchange data with the recording/reproducing apparatus 4. A control section 66 controls respective parts of the main body 61 of the television receiver 4.

[0032]

FIG. 5 is a diagram showing a configuration example of the remote controller 71. The remote controller 71 may be an apparatus that supplies user's instructions to the recording/reproducing apparatus 3 or may be an apparatus that supplies user's instructions to the television receiver 4. Alternatively, the remote controller 71 may be provided as an apparatus common to both the recording/reproducing apparatus 3 and the television receiver 4.

[0033]

For example, the remote controller 71 is provided with: numeric keys 72 to be operated when instructing on channels; a search key 73 to be operated when searching for television programs; and arrow keys 74 to be operated when moving a displayed cursor. When these keys are operated, the communication section 75 outputs a signal to supply the user's instruction to the recording/reproducing apparatus 3 and the television receiver 4. Here, only the keys described above are exemplified as keys, but the other keys

may be provided to perform the other processes.

[0034]

FIG. 6 is a diagram explaining data stored in the storage section 18 (FIG. 2) of the server 2. A television program information file 101 contains EPG data itself received by the communication section 19 or data extracted from the EPG. As shown in FIG. 7, the television program information file 101 stores the following data associated with each other: a television program ID to identify each television program; a broadcast station; a broadcast date and time; a television program name of the television program; a television program content; a genre; and a function containing information indicating whether the broadcast is stereo or captioned.

[0035]

The data in the television program information file 101 is acquired from the EPG and is updated when the EPG is distributed. For example, when the EPG is distributed three times a day, the data in the television program information file 101 is also updated three times a day.

[0036]

As shown in FIG. 8, an association file 102 is a file with a television program ID associated with a characteristic word associated. Note that the characteristic word is extracted as a word characteristically representing the television program. The characteristic word is extracted according to a

specified manner to be described later after reference to the "television program content" in the data stored in the television program information file 101. Further, it may be preferable to reference not only the "television program content" but also the "genre" and the "function".

[0037]

There may be television programs from which the specified manner to be described later does not detect the characteristic words. However, the embodiment need not detect the characteristic words from all television programs. The association file 102 shown in FIG. 8 shows that one term "World Cup" is extracted as the characteristic words of the television program with ID "001". Likewise, characteristic words "fishing, black bass" are extracted for the television program with ID "0051". Characteristic words "fishing, sweetfish, Tama River" are extracted for the television program with ID "0052". Characteristic words "Kyojin, Hanshin" are extracted for the television program with ID "0100".

[0038]

If there are sequential IDs and no missing ID therebetween, the example shown in FIG. 8 shows that characteristic words for IDs "0002" through "0050" are not extracted. Further, as shown in FIG. 8, a plurality of words may be extracted as the characteristic word. Of course, it may be preferable to set limitations such as extracting only one or up to five characteristic words from one television program.

[0039]

A characteristic word file 103 (FIG. 6) is a file composed of only characteristic words. Data composing the characteristic word file 103 is data extracted from the association file 102. FIG. 9 shows an example of data stored in the characteristic word file 103. Data shown in FIG. 9 is equivalent to data extracted from the association file 102 shown in FIG. 8.

[0040]

The characteristic word file 103 shown in FIG. 9 stores words such as "World Cup, fishing, black bus, sweetfish, Tama River, Kyojin, Hanshin". With reference to FIG. 8, for example, characteristic word "fishing" is common to both television programs with ID "0051" and ID "0052". The characteristic word file 103 stores only one such common characteristic word, not two.

[0041]

As dictionaries for generating such files, the storage section 18 stores a synonym dictionary 104, a keyword dictionary 105, and a specific word dictionary 106. The example here assumes that the three dictionaries are stored. Further, it may be preferable to store the other dictionaries or no dictionaries.

[0042]

The synonym dictionary 104 is a dictionary storing words having different forms but the same meaning such as "angling" and "fishing". These words are associated with each other. For example, if word "fishing" is described in

the "television program content" for a given television program, the word is assumed to be synonymous with "angling". Word "angling" is extracted as a characteristic word. That is to say, the synonym dictionary 104 is provided so as not to extract words having the same meaning as the characteristic words.

[0043]

In other words, the synonym dictionary 104 is provided for the following purpose. The characteristic word file 103 stores only a unique word, not a plurality of different words having the same meaning. As a result, the audience can be provided with only the unique word.

[0044]

The keyword dictionary 105 is a dictionary storing words to be extracted as the characteristic words in consideration for the common knowledge, current affairs, and the like. When the "television program content" contains a keyword stored in the keyword dictionary 105, that keyword is extracted as the characteristic word. In this example, it describes that the keyword dictionary 105 stores keywords to be extracted as the characteristic words. By contrast, the keyword dictionary 105 may store words not extracted as characteristic words.

[0045]

The specific word dictionary 106 is a dictionary registering words recommended to be provided for users so as to characterize television programs or rules to extract such words. For example, the specific word dictionary 106

registers names of opponent teams for television programs relaying baseball games, names of countries that produced movies for television programs, and the like. An administrator of the server 2 configures the specific word dictionary 106 and the keyword dictionary 105. It is possible to use commercially available dictionaries for the synonym dictionary 104.

[0046]

These dictionaries are updated as needed. Particularly, it is preferable to periodically update the keyword dictionary 105 since it registers words associated with current affairs.

[0047]

FIG. 10 is a functional block diagram of the server 2. For example, a program is stored in the ROM 12 or the storage section 18. When the program starts, the CPU 11 performs processes in accordance with the program to implement functions of the respective blocks. An EPG reception section 111 controls reception of the EPG received by the communication section 19. When the EPG is received, the EPG reception section 111 supplies the received EPG data to a television program information generation section 112.

[0048]

The television program information file generation section 112 generates television program information from data in the EPG supplied from the EPG reception section 111. The television program information may be EPG data itself

or specific information extracted from the EPG data, as described above. The generated television program information is stored as the television program information file 101 in the storage section 18.

[0049]

The television program information generated by the television program information file generation section 112 is supplied to a characteristic word extraction section 113 and an association file generation section 115. The characteristic word extraction section 113 extracts characteristic words from the supplied television program information in accordance with a specified manner. When extracting the characteristic words, a dictionary search section 114 searches the synonym dictionary 104, the keyword dictionary 105, or the specific word dictionary 106. The dictionary search section 114 supplies a result to the characteristic word extraction section 113.

[0050]

The characteristic words extracted by the characteristic word extraction section 113 are supplied to the association file generation section 115 and the characteristic word file generation section 116. The association file generation section 115 extracts television program IDs from the supplied television program information. The association file generation section 115 associates the extracted television program ID with the supplied characteristic word to generate an association file 102 and stores it in the storage section 18.

[0051]

The characteristic word file generation section 116 generates the characteristic word file 103 from the characteristic words extracted by the characteristic word extraction section 113. The characteristic word file generation section 116 then stores the generated characteristic word file 103 in the storage section 18.

[0052]

Next, with reference to a flowchart in FIG. 11, the following describes a process performed according to the functional block diagram shown in FIG. 10, i.e., the generation process for the respective files. At step S11, the EPG data is received under control of the EPG reception section 111. When the EPG data is received, the process starts at step S12 and later. At step S12, the television program information file generation section 112 generates the television program information from the received EPG data.

[0053]

The generated television program information includes at least data stored as the television program information file 101 shown in FIG. 7 in the storage section 18. The generated television program information is stored in the storage section 18 and is supplied to the characteristic word extraction section 113 and the association file 115. At step S13, the characteristic word extraction section 113 extracts the characteristic words.

[0054]

Referring now to a flowchart in FIG. 12, the following describes in detail the process of extracting the characteristic words performed at step S13. The characteristic word extraction process based on the flowchart shown in FIG. 12 is performed with respect to data for every television programs.

[0055]

At step S21, the characteristic word extraction section 113 acquires a range of data to be extracted as the characteristic words from the television program information generated by the television program information file generation section 112. The range of characteristic words to be extracted may be limited to the television program contents only, or may include information such as television program names and genres in addition to the television program contents.

[0056]

After the range of data to be processed is acquired at step S21, a sentence is analyzed at step S22. During the sentence analysis at step S22, the process extracts, for example, the narration (quoted part) included in the television program content and excludes the narration from the extraction process. It is assumed that words included in the narration hardly represent the contents of the television program properly. For this reason, a sentence analysis process is performed to prevent words in the narration from being extracted as the characteristic words.

[0057]

That is to say, a role of the sentence analysis process performed at step S22 at least includes a process of excluding parts of the sentence containing words inappropriate for characteristic words if extracted. It may be preferable to perform another analysis process different from the sentence analysis that excludes the narration part from the extraction process as mentioned above. A plurality of processes may be combined for the analysis. Further, the sentence analysis may be performed for performing an analysis to extract the characteristic words.

[0058]

The following description assumes that the sentence is analyzed so as to exclude parts containing words inappropriate for the characteristic words. Upon completion of the process at step S22, the process proceeds to step S23. The process divides the part of the sentence into words. That part is devoid of the part excluded from the process and corresponds to the remaining part eligible for the process.

[0059]

The process extracts nouns from the divided words. The extracted nouns are supplied to the dictionary search section 114. The example here extracts only nouns from the divided words because nouns are most appropriate words for representing characteristics of a television program.

[0060]

The television program contents include many adjectives. In other words, the adjectives are often used to represent the television program characteristics. However, the adjectives are too generic and therefore are inappropriate as information when searching intended television programs the audience wants to watch and listen to. As a concrete, the adjective "amusing" can be used like "amusing television program" and is supposed to be often used as the television program content (advertising statement of the television program). On the other hand, it is generally impractical to consider that the television program content includes such an expression as "unenjoyable television program".

[0061]

That is to say, the word "enjoyable" is commonplace. If the word "enjoyable" is provided as a characteristic word when searching the television programs, the audience is given a meaningless word. If this word is used for search, it is expected that the audience is provided with many television programs as a searched result. It is considered that the adjectives are hardly available as meaningful words in a search process.

[0062]

Here, the embodiment is described on the premise that the adjectives are not extracted as the characteristic words for the above-mentioned reason. Of course, there may be an embodiment that allows the adjectives to be extracted. It may be preferable to extract also the adjectives during

the process at step S23. In this case, the subsequent process may be configured to remove the commonplace adjectives and extract specified adjectives.

[0063]

Note that, with respect to verbs, it may be preferable to extract the verb "run" as a synonym for the noun "marathon", for example. That is to say, after the sentence is divided into words at step S23, it may be preferable to extract the verbs in addition to the nouns as words to be passed to the subsequent process. In this case, the extracted verb is converted into the noun and is provided to the audience instead of providing the extracted verb as it is. In this manner, the uniqueness can be given to words provided to the audience, making it possible to provide the audience with an easier-to-use system.

[0064]

The process to convert the verbs into the nouns may be performed at step S23 or in the process at step S24 and later. The process to convert the verbs into the nouns may be performed at any steps. When the process to convert the verbs into the nouns is performed as mentioned above, the characteristic word extraction section 113 divides a sentence into words. As a result, the dictionary search section 114 is supplied with the words, i.e., the verbs in this case. The dictionary search section 114 searches the synonym dictionary 104 (FIG. 6) and reads associated nouns.

[0065]

The thusly searched result is supplied to the

characteristic word extraction section 113. Note that, if a search result may provide no associated nouns, the verb may not be adopted as a characteristic word or the verb itself may be adopted as the characteristic word. The description here assumes that parts of speech other than the noun, adjective, and verb are excluded from the process at step S23.

[0066]

As mentioned above, the process at step S23 divides the sentence into the words. The process at step S24 and later is applied to the words selected for the process. At step S24, the characteristic word extraction section 113 performs the extraction based on specific words. The specific words are the words stored in the specific word dictionary 106 and represent baseball team names, country names, and the like as described above. These words may be stored as the specific words in the specific word dictionary 106. When processing such a phrase as "Kyojin versus Hanshin", for example, the specific word dictionary 106 may store a rule to extract the nouns before and after the word "versus".

[0067]

At step S24, the process extracts the characteristic words in accordance with the words or the rule stored in the specific word dictionary 106. Then, at step S25, the process extracts keywords. Words to be extracted as characteristic words may be words divided in word unit at step S23 and selected for the process or may

be words extracted as a result of extraction based on the specific words at step S24.

[0068]

The keywords are words stored in the keyword dictionary 105 (FIG. 6) and words related to the common knowledge and current affairs as mentioned above.

[0069]

When a word stored in the keyword dictionary 105 matches a word to be selected for the process, that word is extracted as a characteristic word. By contrast, when the word stored in the keyword dictionary 105 matches the word to be selected for the process, that word may be configured not to be extracted as a characteristic word, i.e., as a word not selected for the process. Which to select is a matter of the system design. It is preferable to adopt one of them suitable for the system.

[0070]

Also, it may be preferable to categorize the words stored in the keyword dictionary into two types for the extraction process. In this case, one type is configured to include words to be treated as a characteristic word; and the other not be treated as the characteristic word.

[0071]

Upon completion of the extraction process based on the keywords at step S25, the process performs the extraction based on frequency detection at step S26. Words used to extract the characteristic words may be words divided in word unit and selected for the process at step

S23 or may be only words extracted as a result of extraction based on the keywords at step S25.

[0072]

During the extraction based on the frequency detection, the process detects the frequency of occurrences of a word selected for the process. A word, if used more than once, is considered to represent the characteristic of the television program. That word is extracted as a characteristic word. In this case, it is necessary to define the minimum frequency so that a word is extracted as a characteristic word if that word is used twice or more.

[0073]

During the extraction based on the frequency detection, a plurality of words may be extracted as characteristic words for one television program. In this case, it may be preferable to unlimitedly extract a word whose frequency exceeds the predetermined minimum value. Alternatively, it may be preferable to limit the number of words to be extracted such as up to three per one television program. When the limit is provided, it is desirable to preferentially extract the word having the highest frequency.

[0074]

Based on the characteristic words extracted in this manner, the process at step S27 determines the characteristic words that are actually associated with the television program ID and are registered in the association file 102. Let us consider an example of determining the

characteristic words at step S27 when the characteristic words are extracted at specified steps and are ready to be processed at the subsequent steps. As the steps proceed, the characteristic words are selected and decreased. In this case, the words remaining at the point of termination of the process at step S26 are determined as the final characteristic words.

[0075]

There may be another case where the characteristic words extracted at specified steps are not ready to be processed at the subsequent steps. In other words, the words extracted at the respective steps are temporarily assumed to be the characteristic words independently of each other. Thereafter, a determination process at step S27 determines the final characteristic words. In this case, there are some possible solutions. One solution is to assume all words extracted at the respective steps to be the final characteristic words. Another solution is to determine the specified number of characteristic words out of those extracted at the respective steps. In this case, the characteristic words are determined randomly or based on a specific rule (for example, a rule such as selecting words each consisting of up to three characters). Still another solution is to determine the characteristic words that are extracted more than once out of all the words extracted at the respective steps.

[0076]

Any method of determination may be embodied. It

just needs to provide a scheme that extracts the words suited for the system and deserved to be the characteristic words supplied to the audience. Also, the synonym dictionary 104 is appropriately referenced at each step so as to prevent words having the same meaning from being selected and to perform the process based on one unique word.

[0077]

According to the description with reference to the flowchart in FIG. 12, the process includes a plurality of extraction processes, concretely: the extraction based on the specific words at step S24; the extraction based on the keywords at step S25; the extraction based on the frequency detection at step S26; and the extraction based on the sentence analysis at step S22 performing extractions as needed. Only one of these extraction processes may be used to implement the characteristic word extraction process. Alternatively, two or three extraction processes may be used to implement the characteristic word extraction process.

[0078]

In the above-mentioned embodiment, there have been described that the server 2 extracts the characteristic words. However, an administrator of the server 2 may provide the characteristic words for each television program. When the administrator provides the characteristic words, the administrator provides the words representing the television program characteristics by

referring to the television program contents included in the EPG.

[0079]

Instead of providing the characteristic words by the administrator of the server 2, an EPG distributor may provide the characteristic words. When the EPG distributor provides the characteristic words, the EPG itself contains data related to the characteristic words. That is to say, the association file 102 and the characteristic word file 103 are included in the EPG to be received and are distributed.

[0080]

The process proceeds to step S14 in FIG. 11 when extracting and determining the characteristic words, or when receiving data concerning the characteristic words, as described above. At step S14, the association file 102 is generated and is stored in the storage section 18. The association file generation section 115 (FIG. 10) performs the process at step S14. The association file generation section 115 associates the characteristic word with the television program ID. The characteristic word is extracted and determined by the characteristic word extraction section 113. The television program ID corresponds to the television program content for which the characteristic word is extracted. The television program ID is extracted from the television program information generated by the television program information file generation section 112.

[0081]

The association file generation section 115 generates the association file 102 with IDs and characteristic words associated with each other as shown in FIG. 8. While the association file 102 is thusly generated, the characteristic word file generation section 116 generates the characteristic word file 103 at step S15.

[0082]

The characteristic word file generation section 116 sequentially stores the characteristic words output from the characteristic word extraction section 113 as the characteristic word file 103. When sequentially storing the characteristic words, the characteristic word file generation section 116 determines whether or not the supplied characteristic word exists in the already stored words. The characteristic word file generation section 116 stores the characteristic word only when determined that the word does not exist. Therefore, the same word can be prevented from being stored more than once in the characteristic word file 103.

[0083]

The characteristic word file generation section 116 stores the stored characteristic words as the characteristic word file 103 in the storage section 18. This is performed when the characteristic word extraction section 113 stops supplying data for the characteristic words, i.e., upon completion of the process for data included in the received EPG.

[0084]

Referring now to the flowchart in FIG. 13, the following describes a process using the file generated in this manner, specifically, a process of searching for television programs the audience wants to watch and listen to. At step S41, the recording/reproducing apparatus 3 determines whether or not it is set to a search mode. The recording/reproducing apparatus 3 enables the search mode by receiving a signal output from the remote controller 71 (FIG. 5) when the search key 73 thereof is operated.

[0085]

The audience enables the search mode to search for a television program intended for watching and listening. The description here presents an example of the search mode to use the characteristic words for search. Further, for example, available search modes allow a search by the genres, a search by using the EPG as it is, and the like. It is desirable to provide a scheme that permits the audience to select a plurality of modes. When a plurality of search modes are enabled, one of the plurality of search modes also includes the search mode based on characteristic words. At step S41, the process determines whether or not that search mode is selected.

[0086]

When it is determined that the search mode based on the characteristic words is selected at step S41, the process proceeds to step S42. The recording/reproducing apparatus 3 issues an instruction to the server 2 connected

to the network 1 so as to supply the characteristic word file 103. When receiving the instruction, the server 2 reads the characteristic word file 103 from a recordation section 18 (FIG. 6) at step S31. The server then transmits the characteristic word file 103 to the recording/reproducing apparatus 3 that issued the instruction.

[0087]

At step S43, the recording/reproducing apparatus 3 starts control so as to allow the television receiver 4 to display the characteristic words included in the received characteristic word file 103. While the recording/reproducing apparatus 3 starts the control of displaying the characteristic words, the television receiver 4 uses the display section 62 to display the characteristic words at step S51.

[0088]

FIGS. 14 and 15 show examples of displaying characteristic words. In the display example shown in FIG. 14, the display section 62 of the television receiver 4 displays only the characteristic words. That is to say, when changing to the search mode, the screen displayed at that point changes to another screen displaying only the characteristic words. A cursor 131 is displayed on one of characteristic words of a plurality of characteristic words displayed. FIG. 14 shows a state where the cursor 131 is positioned on a characteristic word "sweetfish".

[0089]

The cursor 131 may be displayed in a graphic symbol such as a quadrangle enclosing the characteristic word. Alternatively, the cursor 131 may be displayed in such a displaying manner as changing or inverting the color of only a word where the cursor 131 is positioned so as to distinguish the word from the other words. The audience can move the cursor 131 onto an intended word by operating the arrow key 74 of the remote controller 71.

[0090]

When the cursor 131 is positioned on an intended word, the audience can select that word as a word to be used for the television program search. To do this, the audience performs a specified operation such as operating the search key 73 or a submit key not shown in drawings. Such operation is predetermined to issue a determination instruction.

[0091]

FIG. 15 is another example of displaying characteristic words. In the example shown in FIG. 15, for example, a currently broadcast television program is displayed (the video displayed at that point remains being displayed). A telop display section 141 is displayed over the screen for the television program. The telop display section 141 sequentially displays characteristic words. For example, the displayed the characteristic words are sequentially displayed so that they scroll from the right to the left in FIG. 15.

[0092]

The cursor 131 can be also displayed on a characteristic word displayed on the telop display section 141. The audience can move the cursor 131 onto an intended characteristic word. Alternatively, the cursor 131 can be fixed to the center of the telop display section 141, for example. When the characteristic words sequentially displayed are displayed in the center, the characteristic word becomes selectable. When the selectable word is an intended word, the audience can perform a specified operation to select that word as a word to be used for the television program search.

[0093]

The description here assumes that the display section 62 of the television receiver 4 displays the characteristic words. Further, the display section 54 of the recording/reproducing apparatus 3 may display the characteristic words. When the display section 54 of the recording/reproducing apparatus 3 displays the characteristic words, the display section 54 may display the characteristic words in the same manner as the telop display section 141 as shown in FIG. 15, for example.

[0094]

Further, if the remote controller 71 is provided with a display section (not shown in drawings) composed of a relatively large LCD, the display section may display the characteristic words.

[0095]

There may be provided a scheme that allows the

audience to select only one characteristic word or a scheme that allows the audience to select a plurality of characteristic words. When there is provided the scheme that allows the audience to select the plurality of characteristic words, for example, the words selected by the audience using the above-mentioned operations are displayed in an upper part of the display section 62 so as to be distinguished from the other selectable characteristic words. Let us assume that the audience selects a plurality of words and determines to select no more words. In this case, a scheme allows a specified operation such as operating the submit key not shown in drawings, or the like to finalize the selection.

[0096]

Let us consider that the audience selects an intended word from the displayed characteristic words. At step S52, the information about the selected characteristic word is output to the recording/reproducing apparatus 3. At step S44, the recording/reproducing apparatus 3 transfers the information about the input selected characteristic word to the server 2 via the network 1.

[0097]

At step S32, the server 2 searches the association file 102 based on the received information about the characteristic word. The server 2 then reads an ID of the television program associated with the characteristic word. For example, when the audience selects a word "sweetfish", searching the association file 102 reads the television

program ID that specifies the word "sweetfish" as a characteristic word. In this case, a plurality of IDs may be read.

[0098]

When the ID is read from the association file 102, searching the television program information file 101 reads television program information corresponding to the read ID. When a plurality of IDs are read, a plurality of pieces of television program information are read. At step S33, a television program record is generated based on the read television program information. The television program record is equivalent to an EPG composed of only the read television program information.

[0099]

The generated television program record is transmitted to the recording/reproducing apparatus 3. At step S45, the recording/reproducing apparatus 3 controls the display of the television program record. When the recording/reproducing apparatus 3 starts controlling the display of the television program record, the display section 62 of the television receiver 4 displays the television program record (step S53). The television program record is displayed like the display examples of the characteristic words as shown in FIGS. 14 and 15. That is to say, the television program record may be displayed on the entire screen or in the telop form.

[0100]

The audience references the displayed television

program record and determines a television program to watch or listen to. The audience reserves television program for watching and listening or recording as needed. When the television program is reserved for recording, the recording/reproducing apparatus 3 performs the recording setup at step S46. The audience can use the displayed television program record for the recording setup.

[0101]

There have been described the recording/reproducing apparatus 3 and the television receiver 4 as separate apparatuses in the above-mentioned embodiment. In addition, the present invention can be applied to an integrated apparatus. Also, the television receiver 4 may perform the processes to be performed by the recording/reproducing apparatus 3 in the above-mentioned description. Further, apparatuses such as a set-top box (STB) and a tuner may perform the above-mentioned processes to be performed by the recording/reproducing apparatus 3 and the television receiver 4.

[0102]

According to the embodiment, the characteristic words provided for the audience to search a television program intended for watching and listening, are extracted from the information about the television program and are given limitations during the extraction. Consequently, it becomes possible to prevent the audience from being provided with words not appropriately representing the television program contents.

[0103]

Also, since no characteristic word can be extracted from a television program that has no words characterizing the television program, it is possible to exclude characterless television programs from the television programs intended for the search by the audience. Accordingly, it is possible to provide a system that can prevent too much information from being supplied to the audience and allow the audience to accurately, easily, and efficiently search for television programs.

[0104]

A series of the above-mentioned processes can be implemented not only by the hardware having the corresponding functions, but also implemented by the software. When the software is used to perform the series of processes, programs constituting the software are installed in a computer from recording media. The computer may be built in the special hardware. Alternatively, the computer may be, for example, a general-purpose personal computer where various programs can be installed to perform various functions.

[0105]

As shown in FIG. 2, the recording media are configured independently of the personal computer (e.g., the server 2 in this case). The recording media include package media that record programs and are distributed to supply the programs to the users. The package media includes: the magnetic disk 31 (including a flexible disk);

the optical disk 32 (including a CD-ROM (Compact Disc-Read Only Memory) and a DVD (Digital Versatile Disc)); the magnetic optical disk 33 (including a MD (Mini-Disc) (registered trademark)); the semiconductor memory 34, and the like. In addition, the recording media are also preinstalled in the computer to be supplied to the users and store the programs. In this case, the recording media are composed of the ROM 12, a hard disk including the storage section 18, and the like.

[0106]

Note that in this specification, the steps describing the programs supplied from the media include chronological processes in accordance with the described sequences. Furthermore, the steps also include processes that are not necessarily performed chronologically, but performed concurrently or individually.

[0107]

Note that in the specification, the system represents the entire apparatus composed of a plurality of apparatuses.

[0108]

[Effect of the Invention]

As described above, according to the first information processing apparatus and method, and program of the present invention, words suitable for representing television program characteristics are extracted from acquired television program information, a first file with the words associated with television program IDs of the

television program information with the words extracted is generated, a second file composed of only the extracted words is generated, the second file is provided to the other apparatus, the television program ID associated with the word represented by the received information is read from the first file if receiving the information about the selected word from the other as a result, and further the television program information identified by the read television program ID is read from the television program information and provided to the other apparatus. Therefore, it is possible to provide a user with a scheme easily searching the television program the user wants to watch and listen to and the information about the television program.

[0109]

Further, according to the second information processing apparatus and method, and program of the present invention, a file composed of information about words suitable for representing characteristics of television programs is received, information about a word instructed by a user among the information about each of words stored in the file is transmitted to the other apparatus that transmitted the file, and as a result, the other apparatus read the file and receives the transmitted information about the television program. Therefore, it is possible to provide a user with a scheme easily searching the television program the user wants to watch and listen to and the information about the television program.

[Brief Description of Drawings]

[FIG. 1]

FIG. 1 is a diagram showing a configuration of an embodiment of an information processing system according to the present invention.

[FIG. 2]

FIG. 2 is a diagram showing an internal configuration example of a server 2.

[FIG. 3]

FIG. 3 is a diagram showing an internal configuration example of a recording/reproducing apparatus 3.

[FIG. 4]

FIG. 4 is a diagram showing an internal configuration example of a television receiver 4.

[FIG. 5]

FIG. 5 is a diagram showing a configuration example of a remote controller 71.

[FIG. 6]

FIG. 6 is a diagram explaining files stored in a storage section 18.

[FIG. 7]

FIG. 7 is a diagram explaining a television program information file 101.

[FIG. 8]

FIG. 8 is a diagram explaining an association file 102.

[FIG. 9]

FIG. 9 is a diagram explaining a characteristic word file 103.

[FIG. 10]

FIG. 10 is a functional block diagram of a server 2.

[FIG. 11]

FIG. 11 is a flowchart explaining a process of generating files.

[FIG. 12]

FIG. 12 is a flowchart explaining in detail an extraction process using characteristic words at step S13.

[FIG. 13]

FIG. 13 is a flowchart explaining a process for searching television programs.

[FIG. 14]

FIG. 14 is a diagram for explaining a display of characteristic words.

[FIG. 15]

FIG. 15 is a diagram for explaining another display of characteristic words.

[Description of Reference Numerals]

1… Network

2… Server

3… Recording/reproducing apparatus

71… Remote controller

73… Search key

101… Television program information file

102… Association file

103... Characteristic word file

104... Synonym dictionary

105... Keyword dictionary

106... Specific word dictionary

[Document Name] Abstract of the Disclosure

[Abstract]

[Problem]

To easily search a television program an audience wants to watch and listen to.

[Solution]

A characteristic word representing a content of a television program extracted from television program information is associated with an ID for identifying the television program, and stored as an association file 102 in a server. A characteristic word file 103 composed of only the characteristic words is also stored in the server. When the audience searches the television programs, the audience is provide with the characteristic words stored in the characteristic word file 103. The audience selects interested words from the provided characteristic words. The server searches the association file 102 according to information about the selected word, reads an ID of the television program associated with the selected characteristic word, further reads television program information corresponding to the ID from a television program information file 101, and provides the television program information to the audience. The present invention can be applied to a recording/reproducing apparatus and a television receiver to search intended television programs.

[Selected Drawing]

FIG. 6

FIG. 1

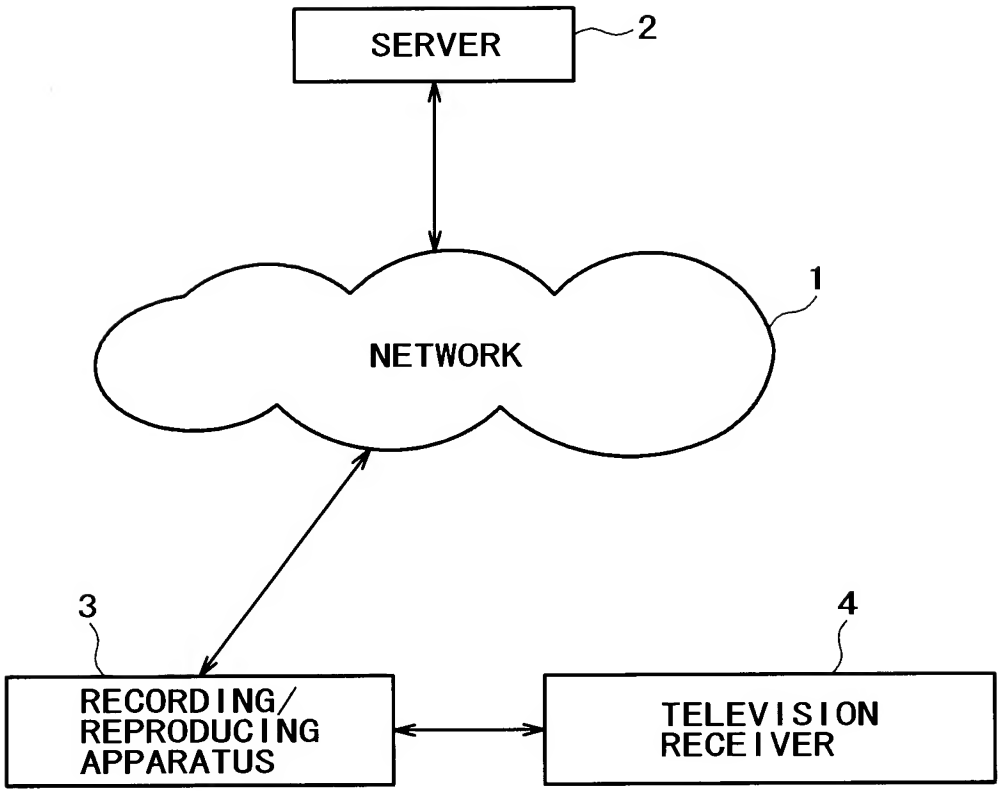

SERVER
2
NETWORK
1
3
4
RECORDING/
REPRODUCING
APPARATUS
TELEVISION
RECEIVER

FIG. 2

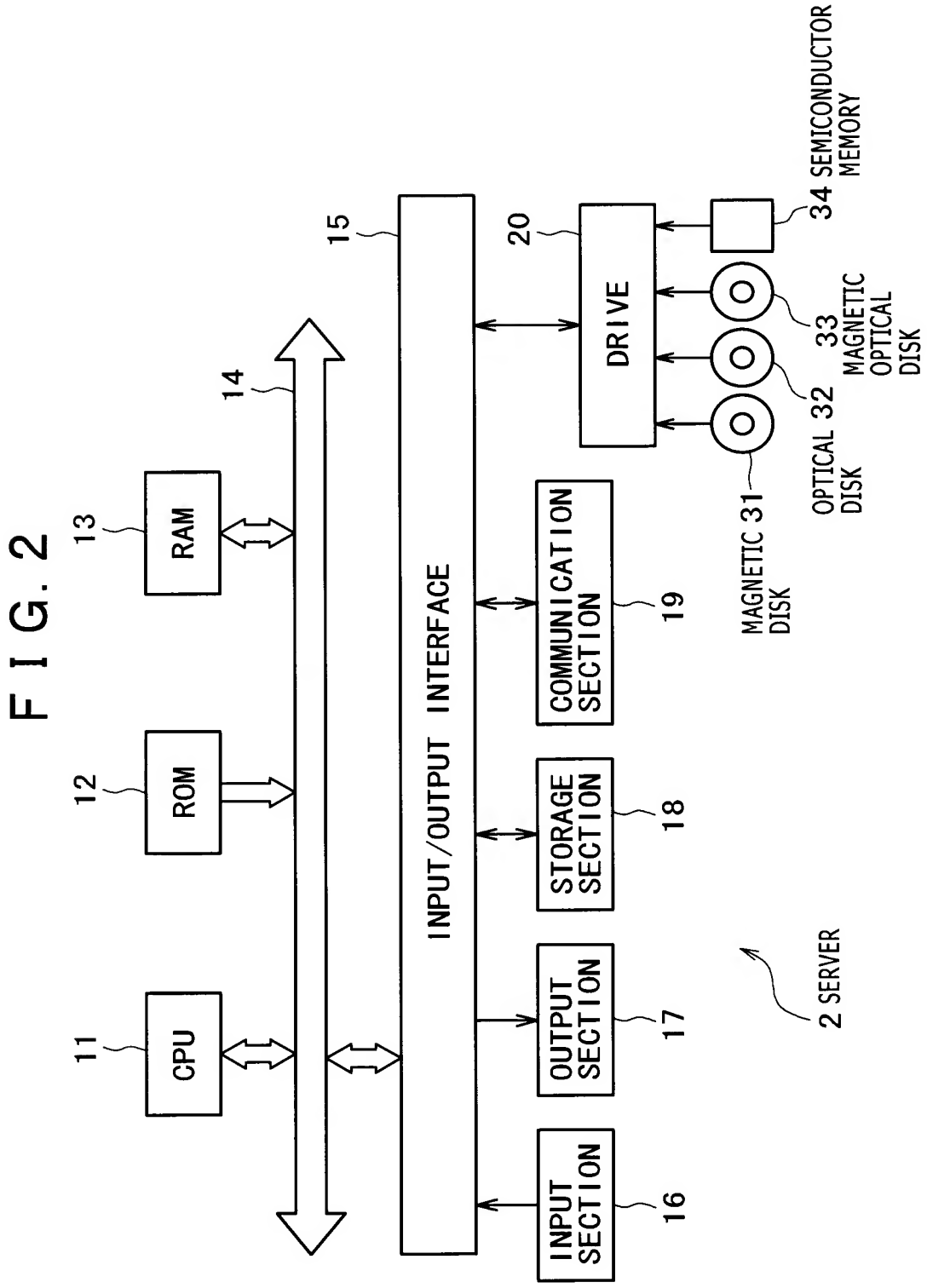

11
CPU
12
ROM
13
RAM
14
15
INPUT/OUTPUT INTERFACE
16
INPUT SECTION
17
OUTPUT SECTION
18
STORAGE SECTION
19
COMMUNICATION SECTION
20
DRIVE
2 SERVER
31 MAGNETIC DISK
32 OPTICAL DISK
33 MAGNETIC OPTICAL DISK
34 SEMICONDUCTOR MEMORY

FIG. 3

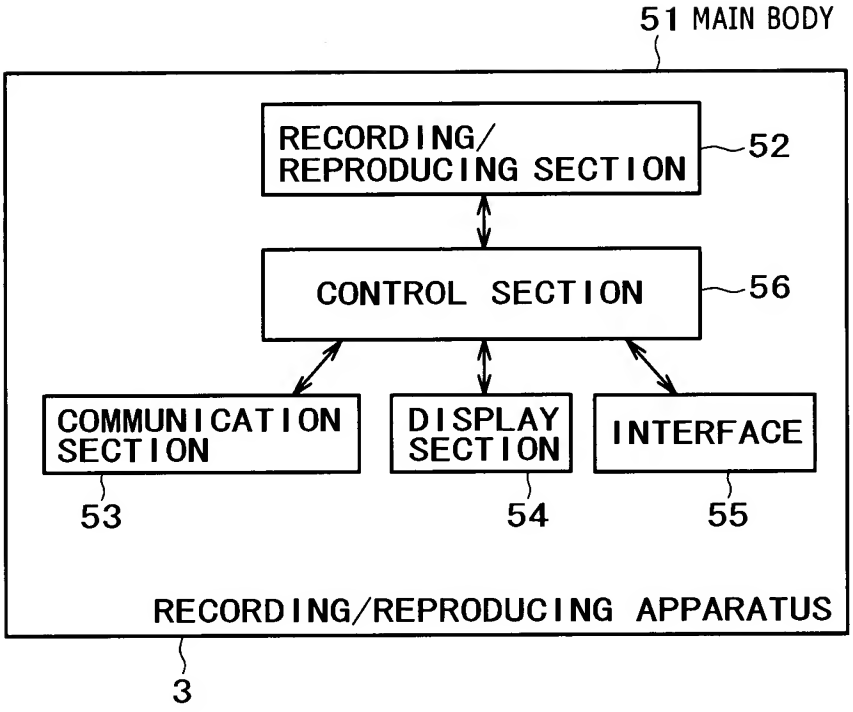

51 MAIN BODY
RECORDING/
REPRODUCING SECTION
52
CONTROL SECTION
56
COMMUNICATION
SECTION
53
DISPLAY
SECTION
54
INTERFACE
55
RECORDING/REPRODUCING APPARATUS
3

FIG. 4

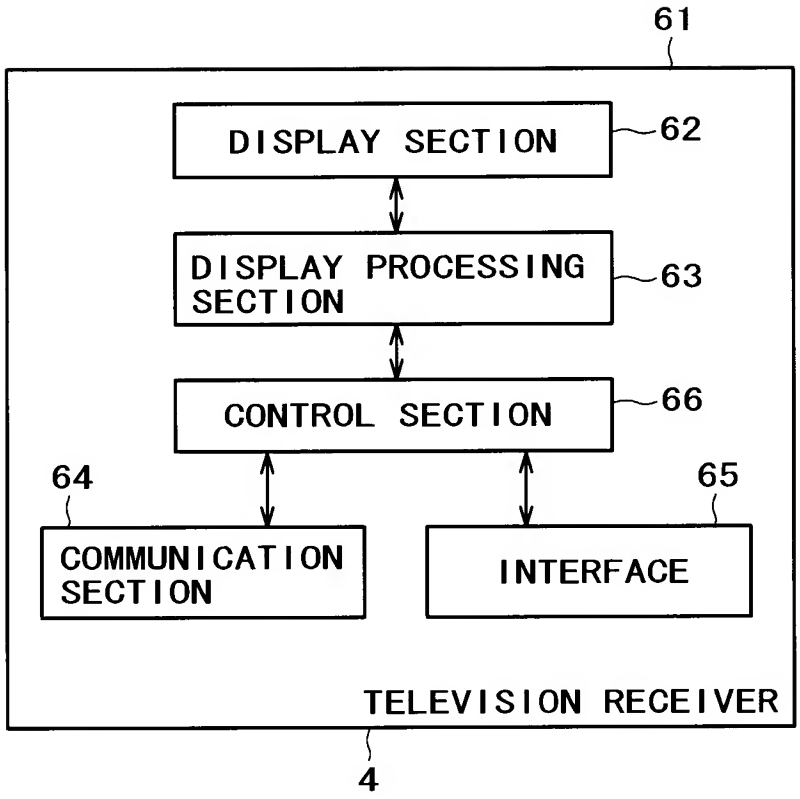

61
DISPLAY SECTION
62
DISPLAY PROCESSING SECTION
63
CONTROL SECTION
66
64
65
COMMUNICATION SECTION
INTERFACE
TELEVISION RECEIVER
4

FIG. 5

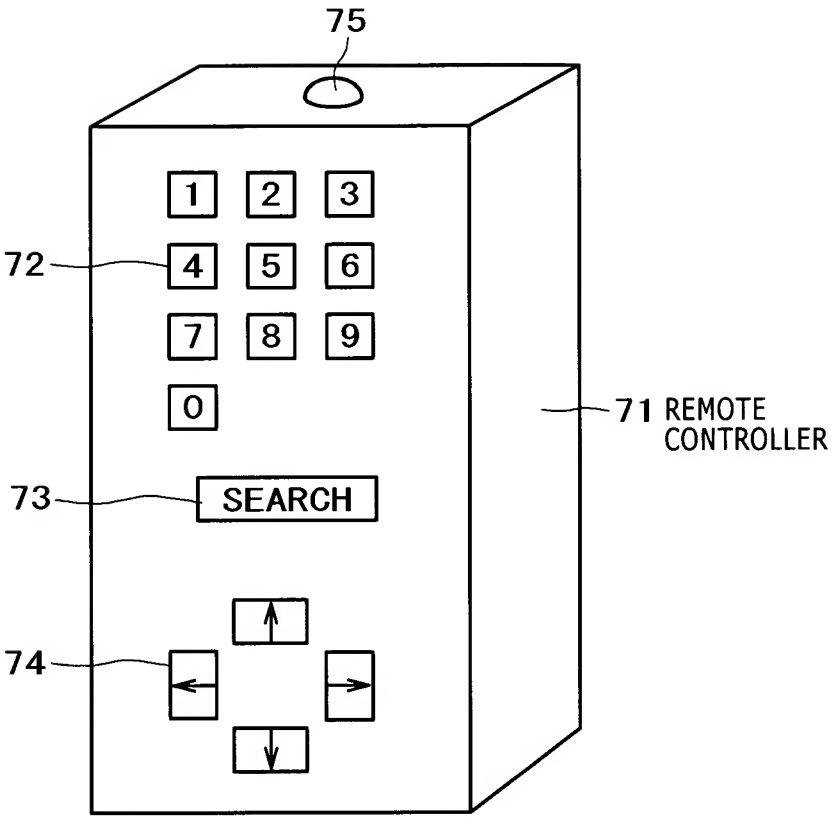


FIG. 6

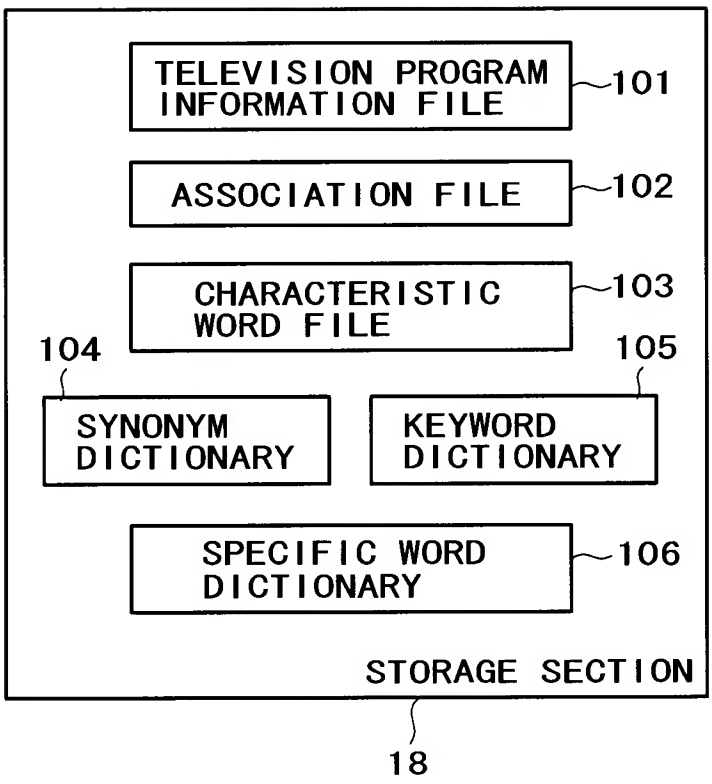

TELEVISION PROGRAM INFORMATION FILE
101
ASSOCIATION FILE
102
CHARACTERISTIC WORD FILE
103
104
105
SYNONYM DICTIONARY
KEYWORD DICTIONARY
SPECIFIC WORD DICTIONARY
106
STORAGE SECTION
18

FIG. 7

101

ID	BROADCAST STATION	BROADCAST DATE AND TIME	TELEVISION PROGRAM NAME	CONTENT	GENRE	FUNCTION
0001	1	0:00～1:00	A	•••	•••	•••
0002	1	1:00～2:00	B	•••	•••	•••
•••	•••	•••	•••	•••	•••	•••

FIG. 8

ID	CHARACTERISTIC WORD
0001	WORLD CUP
0051	FISHING, BLACK BASS
0052	FISHING, SWEETFISH, TAMA RIVER
0100	KYOJIN, HANSHIN
⌇	⌇

102

FIG. 9

CHARACTERISTIC WORD
WORLD CUP, FISHING, BLACKBASS, SWEETFISH, TAMA RIVER, KYOJIN, HANSHIN, ··· .....

103

FIG. 10

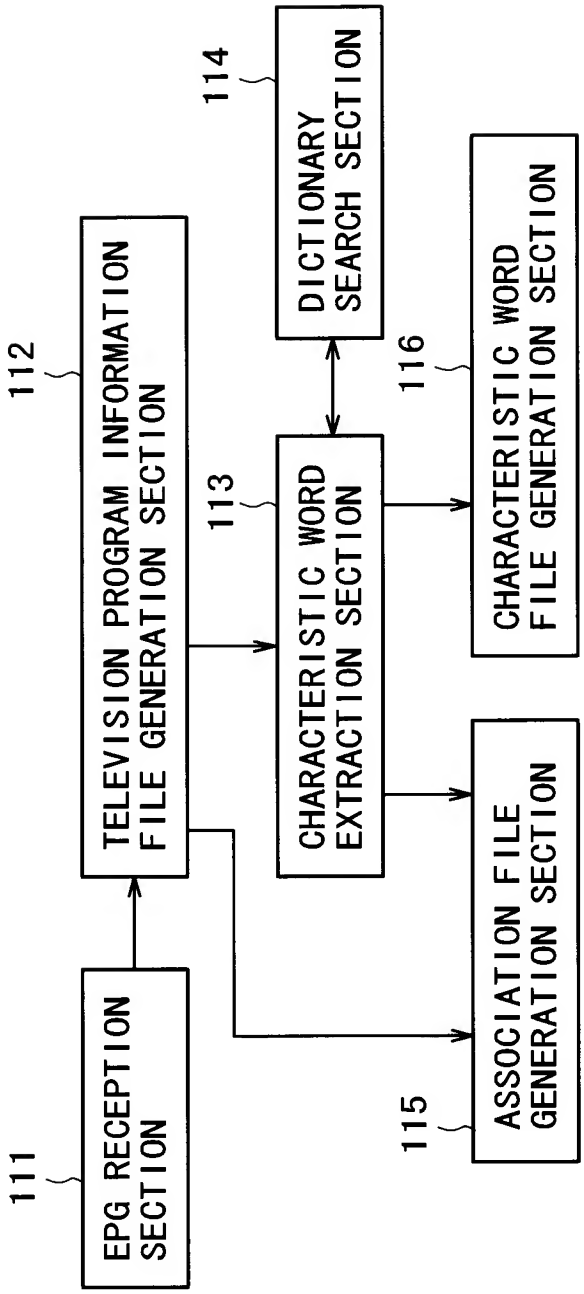

111
EPG RECEPTION SECTION
112
TELEVISION PROGRAM INFORMATION FILE GENERATION SECTION
113
CHARACTERISTIC WORD EXTRACTION SECTION
114
DICTIONARY SEARCH SECTION
115
ASSOCIATION FILE GENERATION SECTION
116
CHARACTERISTIC WORD FILE GENERATION SECTION

FIG. 11

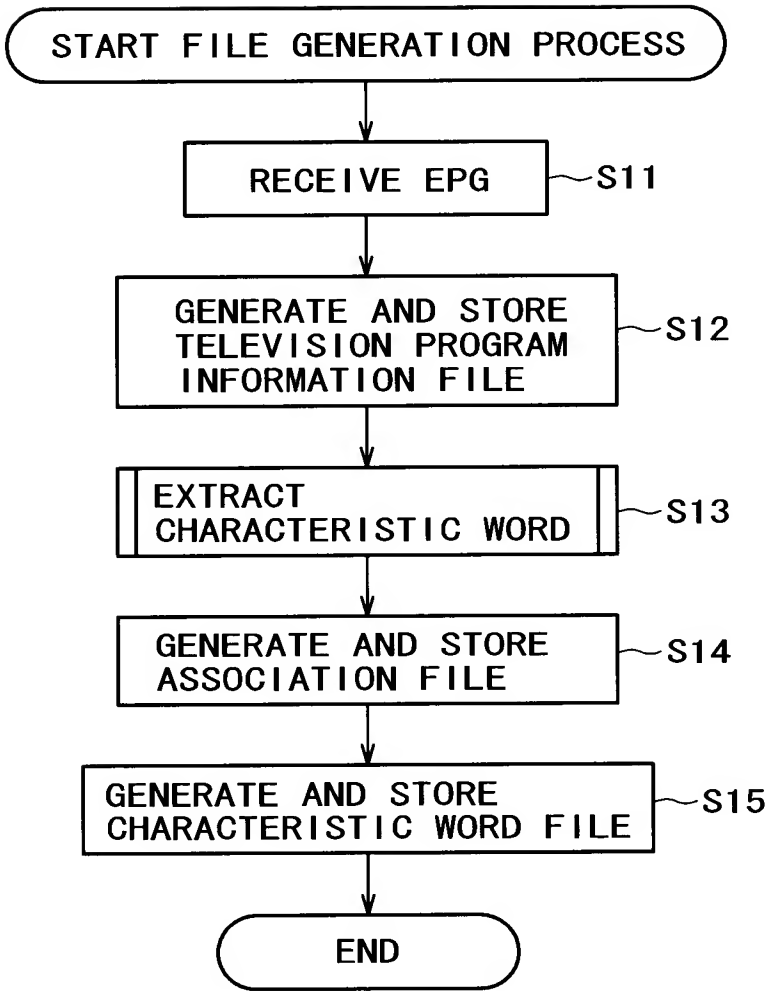

START FILE GENERATION PROCESS
RECEIVE EPG
S11
GENERATE AND STORE TELEVISION PROGRAM INFORMATION FILE
S12
EXTRACT CHARACTERISTIC WORD
S13
GENERATE AND STORE ASSOCIATION FILE
S14
GENERATE AND STORE CHARACTERISTIC WORD FILE
S15
END

FIG. 12

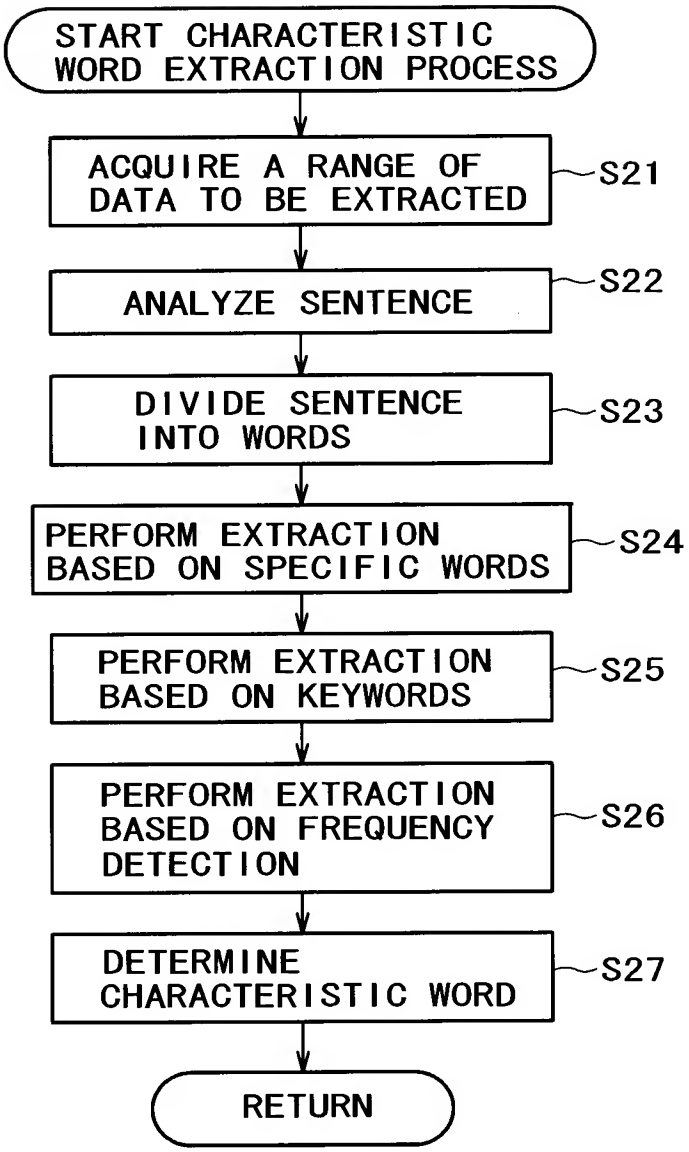

START CHARACTERISTIC WORD EXTRACTION PROCESS
ACQUIRE A RANGE OF DATA TO BE EXTRACTED
S21
ANALYZE SENTENCE
S22
DIVIDE SENTENCE INTO WORDS
S23
PERFORM EXTRACTION BASED ON SPECIFIC WORDS
S24
PERFORM EXTRACTION BASED ON KEYWORDS
S25
PERFORM EXTRACTION BASED ON FREQUENCY DETECTION
S26
DETERMINE CHARACTERISTIC WORD
S27
RETURN

FIG. 13

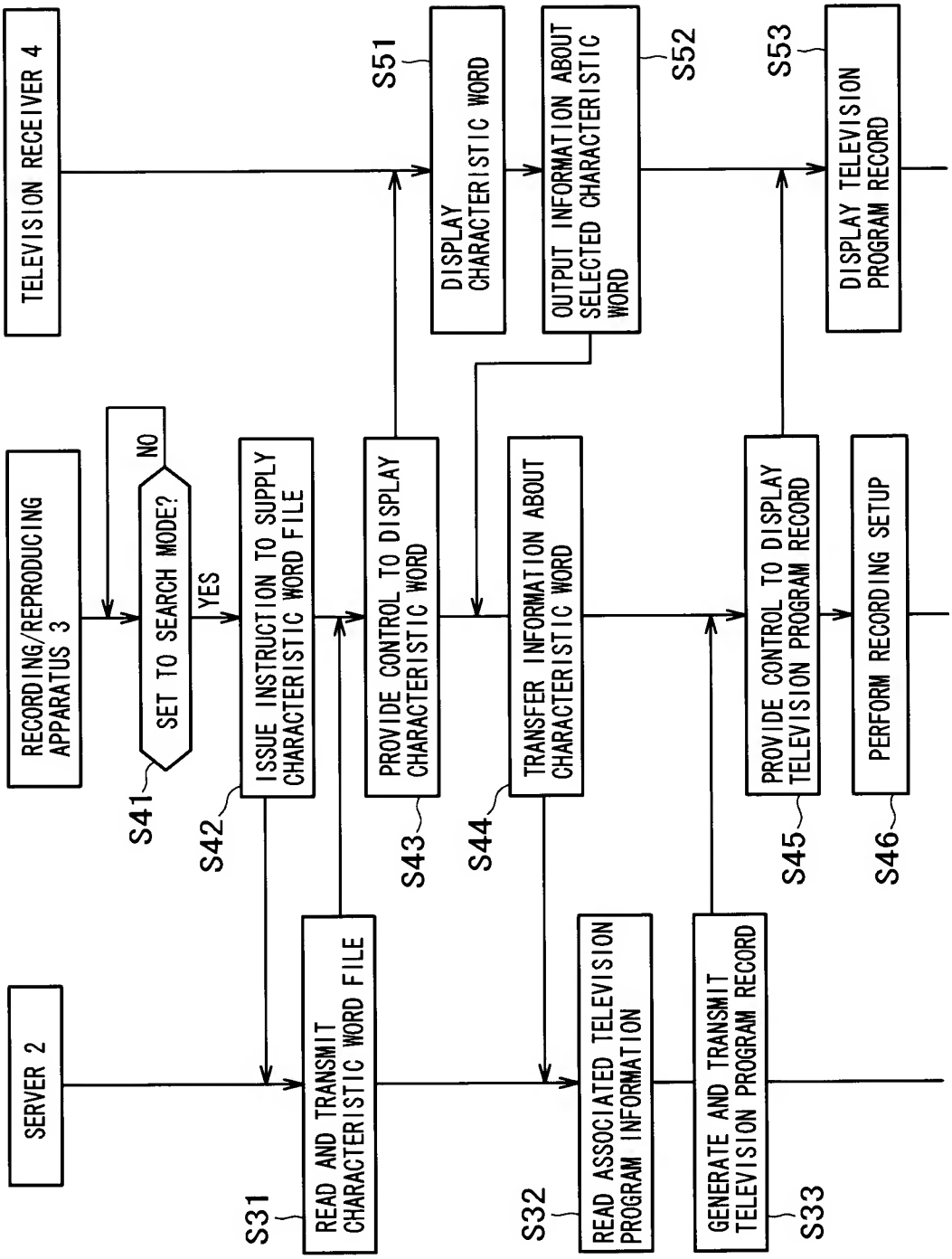

TELEVISION RECEIVER 4
RECORDING/REPRODUCING APPARATUS 3
SERVER 2
SET TO SEARCH MODE?
NO
YES
S41
ISSUE INSTRUCTION TO SUPPLY CHARACTERISTIC WORD FILE
S42
READ AND TRANSMIT CHARACTERISTIC WORD FILE
S31
PROVIDE CONTROL TO DISPLAY CHARACTERISTIC WORD
S43
DISPLAY CHARACTERISTIC WORD
S51
TRANSFER INFORMATION ABOUT CHARACTERISTIC WORD
S44
READ ASSOCIATED TELEVISION PROGRAM INFORMATION
S32
OUTPUT INFORMATION ABOUT SELECTED CHARACTERISTIC WORD
S52
PROVIDE CONTROL TO DISPLAY TELEVISION PROGRAM RECORD
S45
GENERATE AND TRANSMIT TELEVISION PROGRAM RECORD
S33
PERFORM RECORDING SETUP
S46
DISPLAY TELEVISION PROGRAM RECORD
S53

FIG. 14

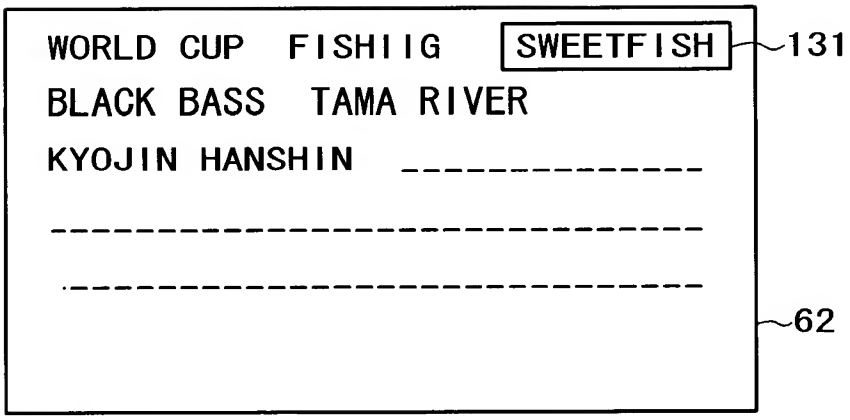
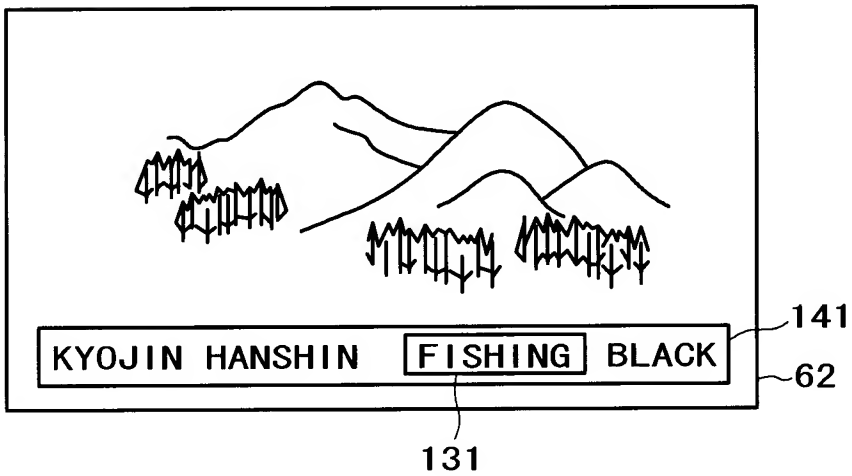

WORLD CUP FISHIIG
SWEETFISH
131
BLACK BASS TAMA RIVER
KYOJIN HANSHIN
62

FIG. 15


KYOJIN HANSHIN
FISHING
BLACK
141
62
131